What is claimed is:

1. In a method for synthesizing metal oxide nanoparticles having better magnetic characteristics, a method for synthesizing metal oxide nanoparticles, comprising:

forming a reverse micelle solution by adding distilled water, a surfacetant and a solvent to metallic salt not less than trivalent, precipitating and separating gel type amorphous metal oxide particles by adding proton scavenger to the reverse micelle solution;

adjusting a molar ratio of metal oxide to the surfactant by washing the gel type amorphous metal oxide particles with a polar solvent; and

crystallizing metal oxide nanoparticles by heating or reflux after dispersing the gel type amorphous metal oxide particles in a non-polar solvent having a high boiling point.

2. The method of claim 1, wherein a size of a finally obtained metal oxide particle is increased according to increase of a molar ratio of distilled water to metallic salt.

3. The method of claim 1, wherein the surfactant is one selected from RCOOH, RNH_2 or mixtures thereof, and R- is alkyl or alkenyl consisting of hydrocarbon chains not less than six.

4. The method of claim 1, wherein the solvent for forming the reverse micelle solution is one selected from dibenzylether or diphenylether.

5. The method of claim 1, wherein the proton scavenger is one selected from etylene oxide, propylene oxide, 1,2-epoxybutane, 1,2-epoxypentane, 2,3-epoxypropylbenzene, trimethylene oxide, glycidol, epichlorohydrin, or epibromohydrin.

6. The method of claim 1, wherein the polar solvent for washing the gel type amorphous metal oxide particles is one selected from methanol, ethanol, propanol or acetone.

7. The method of claim 1, wherein shape anisotropy of crystallized metal oxide particles can be increased by increasing the number of the gel type amorphous metal oxide particles-washing times.

8. The method of claim 1, wherein a non-polar solvent for heating or refluxing the gel type amorphous metal oxide particles is tetralin.

9. The method of claim 1, wherein magnetism of the metal oxide nanoparticle is increased according to increase of heating or reflux time.

10. The method of claim 1, wherein the metallic salt not less than trivalent includes metallic ions selected from Fe^{3+}, Ru^{3+}, Os^{3+}, Cr^{3+}, Al^{3+}, In^{3+}, Ga^{3+}, Sn^{4+}, Zr^{4+}, Hf^{4+}, Nb^{5+}, W^{6+}, Y^{3+}, La^{3+}, Ce^{3+}, Pr^{3+}, Nd^{3+}, Pm^{3+}, Sm^{3+}, Eu^{3+}, Gd^{3+}, Tb^{3+}, Dy^{3+}, Ho^{3+}, Er^{3+}, Tm^{3+}, Yb^{3+}, or Lu^{3+}.

11. The method of claim 1, wherein the trivalent metal salt is one selected from $FeCl_3$ or hydrate thereof ($FeCl_3 \cdot xH_2O$), $Fe(NO_3)_3$ or hydrate thereof [$Fe(NO_3)_3 \cdot xH_2O$], $Fe_2(SO_4)_3$ or hydrate thereof [$Fe_2(SO_4)_3 \cdot xH_2O$], $FePO_4$ or hydrate thereof [$FePO_4 \cdot xH_2O$], $Fe(OOCCH_3)_3$ or hydrate thereof [$Fe(OOCCH_3)_3 \cdot xH_2O$], and the nano-sized metal oxide particles are maghemite (γ-Fe_2O_3) or hematite (α-Fe_2O_3) or maghemite and hematite-mixed particles.

12. The method of claim 11, wherein only maghemite phase is obtained by eliminating moisture from the gel type amorphous metal oxide particles through vacuum-drying and performing reflux at a temperature within 214 ~ 224°C, more preferable 215 ~ 219°C, in a nitrogen atmosphere.

13. The method of claim 11, wherein only hematite phase is obtained by drying the gel type amorphous metal oxide particles only in the atmosphere and heating at a temperature within 150 ~ 168°C, more preferable 165 ~ 168°C, in a nitrogen atmosphere.

14. The method of claim 1, wherein maghemite and hematite-mixed phase is obtained by drying the gel type amorphous metal oxide particles only in the atmosphere and performing heating or refluxing at a temperature within 150 ~ 224°C, more preferable 168 ~ 219°C, in a nitrogen atmosphere.

15. Rod-shaped maghemite (γ-Fe_2O_3) particles, wherein an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof exceeds 1 and is not greater than 10.

16. Rod-shaped maghemite (γ -Fe_2O_3) nanoparticles, wherein rod-shaped maghemite (γ -Fe_2O_3) nanoparticles are synthesized by the method of claim 1, an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof exceeds 1 and is not greater than 10.

17. Rod-shaped hematite (α -Fe_2O_3) nanoparticles, wherein an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof is not less than 1 and is not greater than 10.

18. Rod-shaped hematite (α -Fe_2O_3) nanoparticles, wherein rod-shaped hematite (α -Fe_2O_3) nanoparticles are fabricated by the method of claim 11, an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof is not less than 1 and is not greater than 10.

19. Rod-shaped maghemite (γ -Fe_2O_3) and hematite (α -Fe_2O_3)-mixed nanoparticles, wherein an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof exceeds 1 and is not greater than 10.

20. Rod-shaped maghemite (γ -Fe_2O_3) and hematite (α -Fe_2O_3)-mixed nanoparticles, wherein rod-shaped maghemite (γ -Fe_2O_3) and hematite (α -Fe_2O_3)-mixed particles are fabricated by the method of claim 11, an average diameter thereof is within 2 ~ 10 nm, and a ratio of length to diameter thereof exceeds 1 and is not greater than 10.